

IN THE CLAIMS AMEND

1. (AMENDED) A microelectrode system comprising a laminated structure having:
 - at least one conducting layer of thickness in the range 1 to 10 microns capable of acting as an electrode,
 - at least one dielectric layer;
 - an aperture formed in the laminated structure with a diameter in the range 0.5 to 500 microns, wherein said aperture is a through hole which extends through the laminated structure and is open at both ends; and
 - contact means for allowing electrical contact with at least one conducting layer.
2. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein said aperture defines a uniform or non-uniform internal wall in the laminate structure.
3. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein said aperture defines a substantially tubular internal wall in the laminate structure.
4. (ORIGINAL) A microelectrode system as claimed in claim 1 comprising a plurality of apertures.
5. (DELETED).
6. (DELETED).

U
C
C

7. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein at least one conducting layer is functionalised.
8. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein at least one dielectric layer is made from a rubbery material having a solid state matrix capable of swelling in the presence of a liquid or gas.
9. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein consecutive conducting layers are separated by dielectric layers.
10. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein the laminate structure is constructed on a base comprising silicon or a polymeric material.
11. (DELETED).
12. (DELETED).
13. (DELETED).
14. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein at least one conducting layer is metallic and treated with an organic conducting layer.

15. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein at least one conducting layer is a silver/silver chloride reference electrode.

16. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein at least one conducting layer consists essentially of gold.

17. (ORIGINAL) A microelectrode system as claimed in claim 16, wherein at least one dielectric layer is polymeric and acts as a support for the gold conducting layer.

18. (ORIGINAL) A microelectrode system as claimed in claim 1 comprising means for assisting mass transport.

19. (ORIGINAL) A microelectrode system as claimed in claim 18 wherein said means for assisting mass transport is a piezoelectric vibrator or ultrasonic probe.

20. (ORIGINAL) A microelectrode system as claimed in claim 1 comprising alternating conducting and dielectric layers.

21. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein at least one dielectric layer comprises a specialized layer in the form of an ion exchange resin, gel or solid electrolyte.

22. (ORIGINAL) A microelectrode system as claimed in claim 21 wherein the specialized layer is provided with means to apply physical or chemical gradients or potentials thereto.

23. (ORIGINAL) A microelectrode system as claimed in claim 1 wherein at least one dielectric layer comprises a reagent loaded or functionalised layer.

24. (DELETED)

25. (DELETED)

26. (DELETED)

27. (DELETED)

28. (DELETED)

29. (NEW) A microelectrode system comprising a laminated structure having:

- at least one conducting layer of thickness in the range 1 to 10 microns capable of acting as an electrode,
- at least one dielectric layer,
- at least one pair of apertures formed in the laminated structure into at least one pair of substantially collinear wells having a common well bottom, each well formed in the laminated structure with a diameter in the range of 0.5 to 500 microns, and
- contact means for allowing electrical contact with at least one conducting layer.

30. (NEW) A microelectrode system as claimed in claim 24 wherein the at least one pair of substantially collinear wells is a plurality of pairs of substantially collinear wells having a common well bottom.

31. (NEW) A microelectrode system as claimed in claim 24 wherein said well bottom is formed from an ion exchange material.

32. (RE-PRESENTED – FORMERLY DEPENDENT CLAIM #14) A microelectrode system comprising a laminated structure having:

- at least one conducting layer capable of acting as an electrode, wherein said conducting layer is metallic and treated with an organic conducting layer
- at least one dielectric layer,
- an aperture formed in the laminated structure, and
- contact means for allowing electrical contract with at least one conducting layer.

33. (RE-PRESENTED – FORMERLY DEPENDENT CLAIM #19) A microelectrode system comprising a laminated structure having:

- at least one dielectric layer,
- an aperture formed in the laminated structure, and
- contact means for allowing electrical contract with at least one conducting layer,
- said system comprising means for assisting mass transport being a piezoelectric vibrator or ultrasonic probe.

34. (RE-PRESENTED – FORMERLY DEPENDENT CLAIM #22) A microelectrode system comprising a laminated structure having:

- at least one conducting layer capable of acting as an electrode,
- at least one dielectric layer, wherein at least one of said at least one dielectric layers comprises a specialised layer in the form of an ion exchange resin, gel or solid electrolyte and said specialised layer is provided with means to apply physical or chemical gradients or potential thereto,
- an aperture formed in the laminated structure, and
- contact means for allowing electrical contact with at least one conducting layer.

C2